

## 400 Mev Orbump Magnet Information

Below is a table of fit coefficients from the Booster Orbit Bump Magnet Measurements fitted to the polynomial.

$$f(x) := b_0 + b_1 \cdot x + b_2 \cdot x^2 + b_3 \cdot x^3 + b_4 \cdot x^4 + b_5 \cdot x^5 + b_6 \cdot x^6$$

$F(x)$  is in Tesla with the current in the magnet @ 15Ka. The ‘x’ variable is in centimeters; the center of the magnet being 0.0cm and the range is +/- 6.5 cm. Magnets 3,4, 5, and 6 are installed on the girder. The order of installation from upstream to downstream is:

Serial No. 003, Serial No. 004, Serial No. 006, Serial No 005.

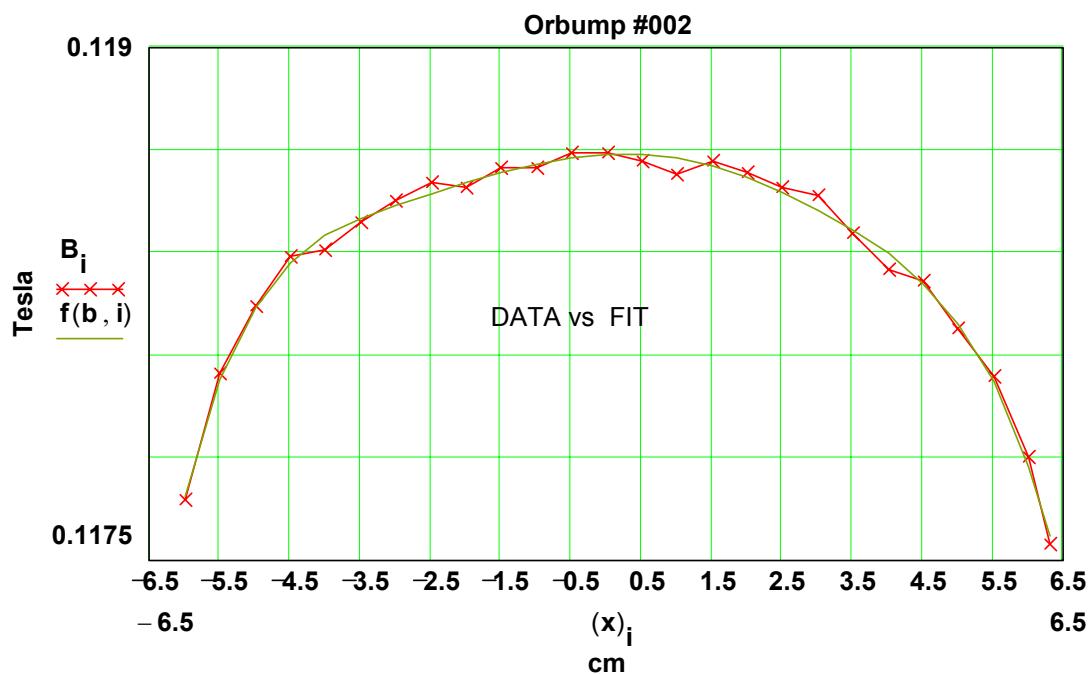
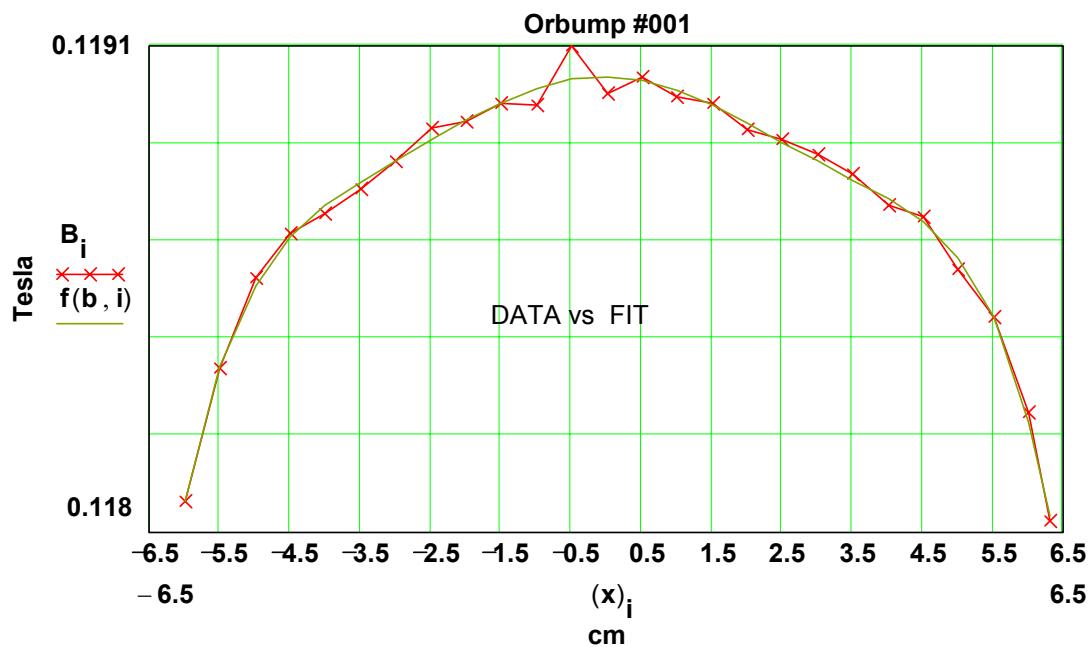
### Fit Coefficients

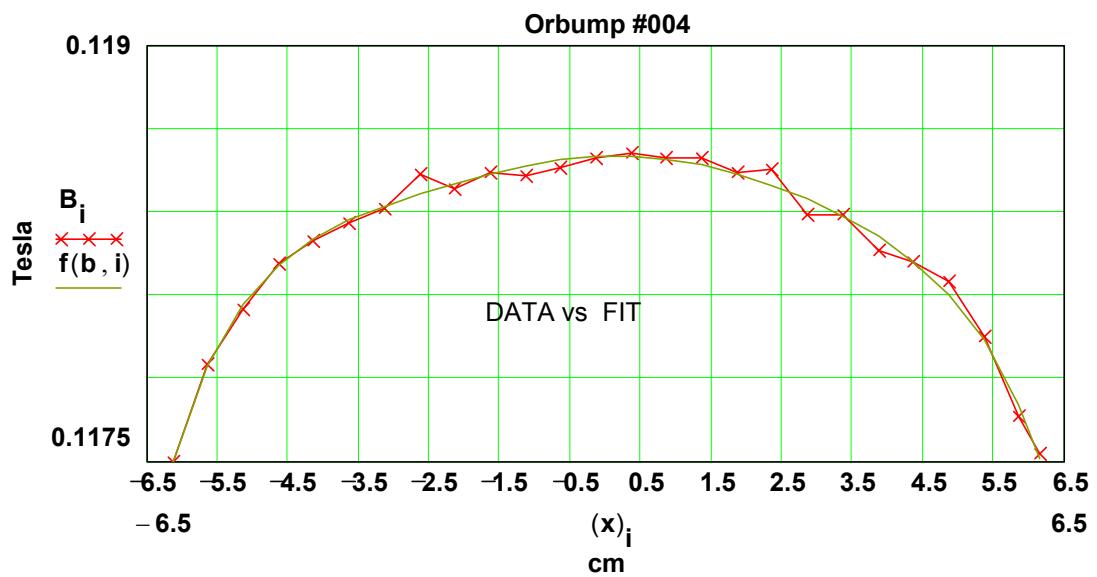
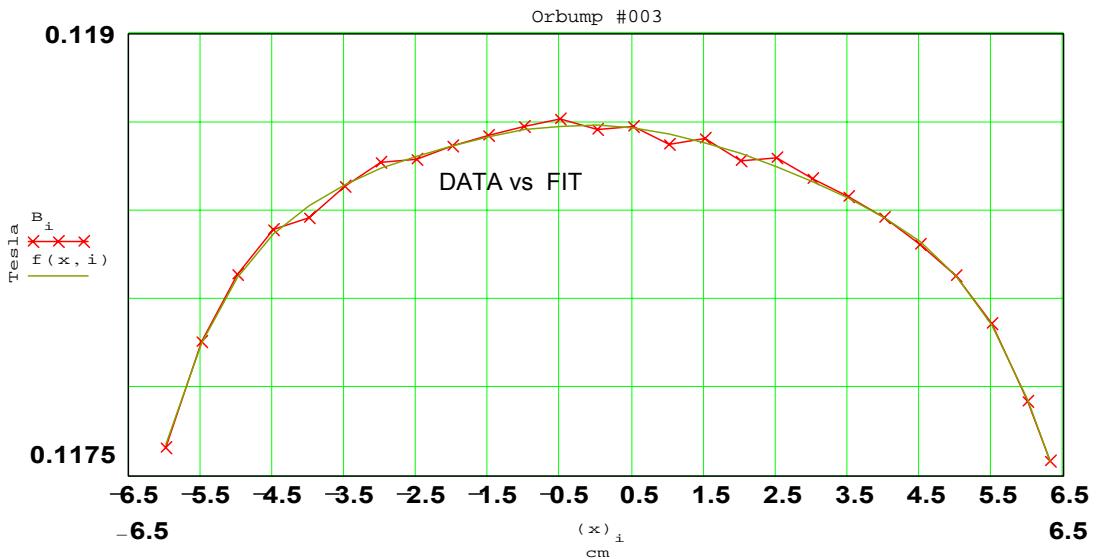
	Serial No. 001	Serial No. 002	Serial No. 003	Serial No. 004	Serial No. 005	Serial No. 006
$B_0$	0.119	0.118687	0.118688	0.1185986	0.1187043	0.1189713
$B_1$	-1.5879E-6	9.7075648E-6	-6.2072394E-6	8.4573073E-6	1.0158503E-6	-1.4091413E-5
$B_2$	-3.0075E-5	-2.1693084E-5	-2.2677918E-5	-2.2101616E-5	-2.3843281E-5	-2.4162193E-5
$B_3$	1.4786E-8	-1.7751887E-6	-2.9131911E-7	-1.3141949E-6	-2.1504142E-7	1.3834908E-6
$B_4$	1.2479E-6	6.7890184E-7	6.1573432E-7	5.347081E-7	6.030157E-7	8.8471392E-7
$B_5$	1.2272E-8	4.7432052E-8	2.2697851E-8	2.9503891E-8	-1.4023438E-9	-3.0378154E-8
$B_6$	-3.0104E-8	-2.2650174E-8	-2.1199849E-8	-1.8904921E-8	-2.0336054E-8	-2.8009184E-8

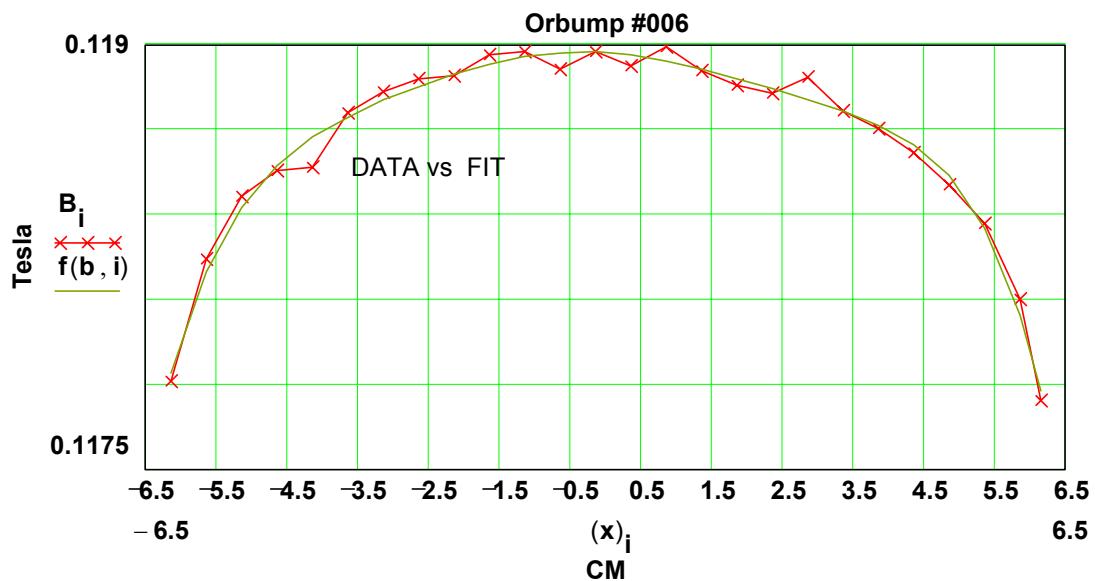
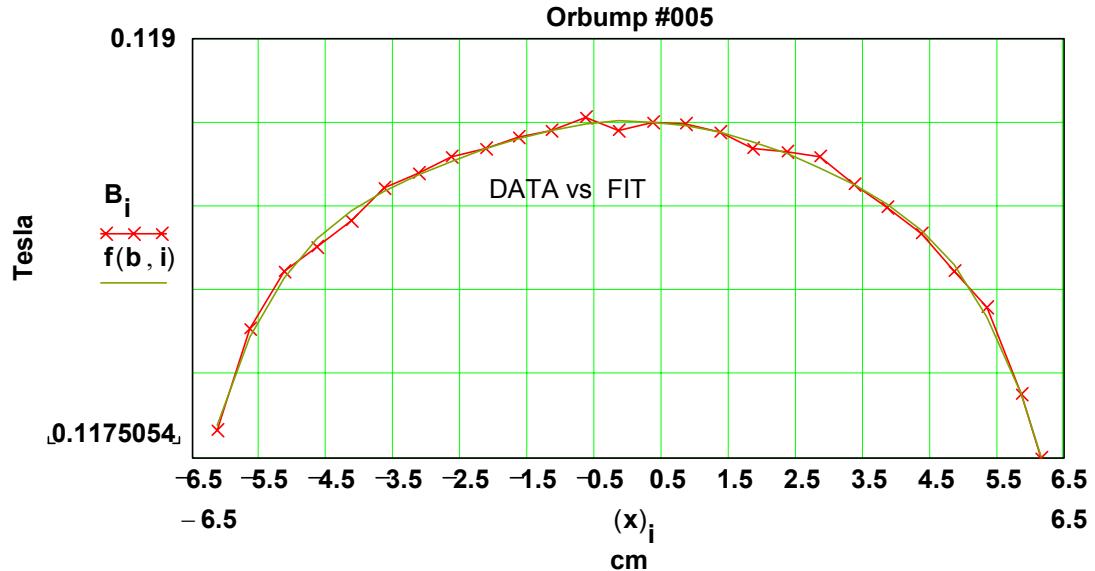
### Fit Coefficients with magnet center offset

	Serial No. 003	Serial No. 004	Serial No. 005	Serial No. 006
X offset	+5 mm	+35 mm	+5 mm	+35 mm
$B_0$	0.1186855	0.1183826	0.1187017	0.1187639
$B_1$	1.595539E-5	-1.3273722E-4	-1.5650803E-5	-8.6389447E-5
$B_2$	-2.1365585E-5	-2.3927171E-5	-2.3631036E-5	-1.5020722E-5
$B_3$	-1.4130435E-6	-5.0527843E-6	6.1002453E-7	-1.1230847E-5
$B_4$	4.7949026E-7	-2.1535089E-6	5.631941E-7	-4.3391162E-6
$B_5$	8.6297397E-8	-3.5048503E-7	-4.4108058E-8	-5.9336276E-7
$B_6$	-2.1199849E-8	-1.8904921E-8	-2.0336054E-8	-2.8009184E-8

## Field Plots



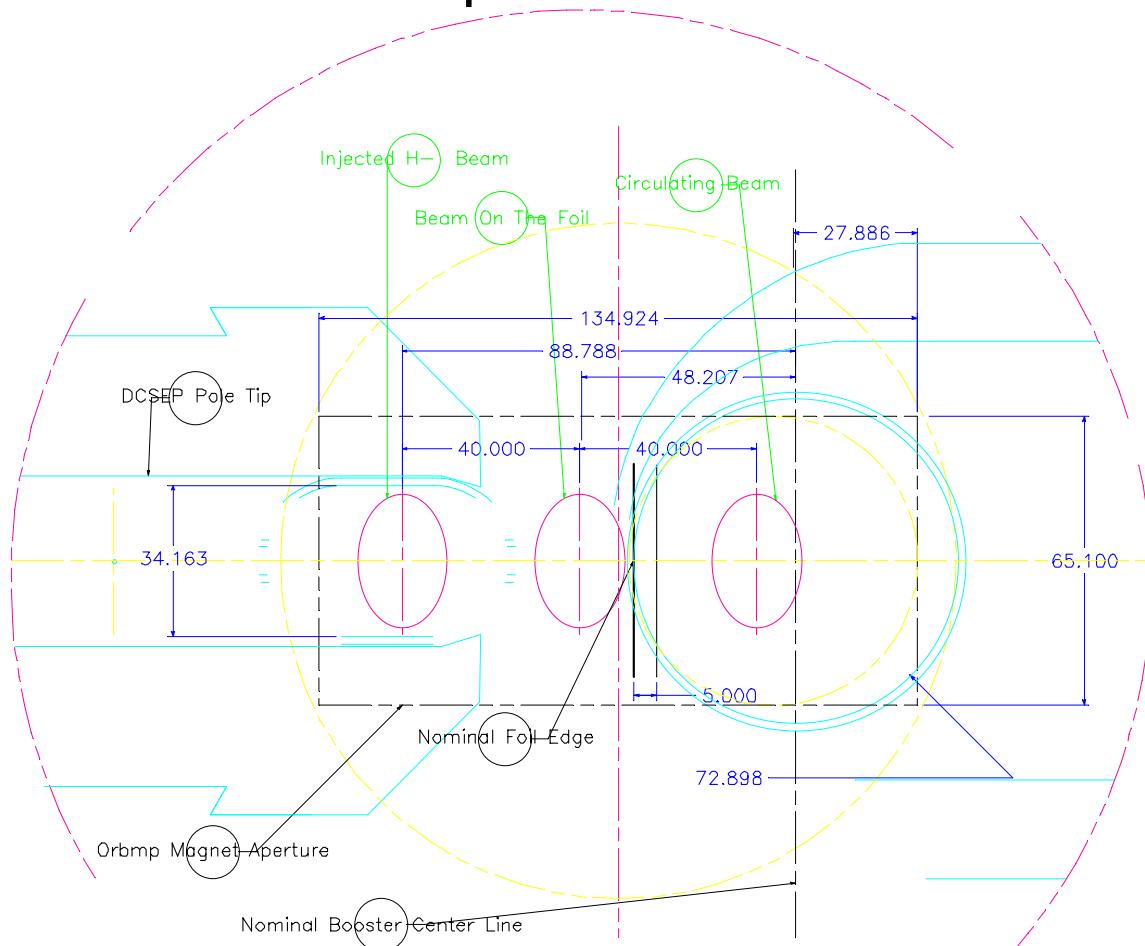




The 1<sup>st</sup> drawing below shows the nominal transverse dimensioning through the injection girder. All apertures through the girder are overlayed from upstream to downstream. The poletips and magnetic field shielding of the DCSeptum is shown. The apertures of the Orbmp magnets and the various beam pipes are also shown. The nominal position of the stripping foil edge is pointed out along with the nominal positions of the beams at injection. At this time there are 2 foils on the foil changer whose edges are 5 mm inside the nominal edge position. On the injection girder with the bend center spacing as shown below the step size of the beam is 4 cm with a nominal current of 15 Kamps in the magnets.

The 2nd drawing shows the bend center spacing of the injection girder magnets all referenced to the US and DS Booster magnets.

# Injection Girder Transverse Layout. ie. Where the nominal Beam and apertures are:::



400 MEV Injection Girder  
Bend Center Spacing  
Referenced to Booster  
Magnet Reference Points

